DOWNLOAD PDF DRUGS AFFECTING GROWTH OF TUMOURS (MILESTONES IN DRUG THERAPY)

Chapter 1 : Medicines to Treat Pituitary Tumors

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Capecitabine Xeloda Oxaliplatin Eloxatin For poorly differentiated high-grade NETs sometimes called neuroendocrine carcinomas , a combination of a platinum drug either cisplatin or carboplatin plus etoposide is often used. To learn more about chemo including possible side effects , see the Chemotherapy section of our website. Targeted therapy for pancreatic neuroendocrine tumors Targeted drugs work differently from standard chemo drugs. They attack specific changes in tumor cells that help them grow. Some targeted drugs can be helpful in treating advanced pancreatic NETs. Sunitinib Sutent attacks new blood vessel growth and other targets that help cancer cells grow. In advanced pancreatic NETs, it has been shown to slow tumor growth and help patients live longer. This drug is taken as pills once a day. The most common side effects are nausea, diarrhea, changes in skin or hair color, mouth sores, weakness, and low blood cell counts. Other possible effects include tiredness, high blood pressure, heart problems, bleeding, hand-foot syndrome redness, pain, and skin peeling of the palms of the hands and the soles of the feet , and low thyroid hormone levels. Everolimus Afinitor works by blocking a cell protein known as mTOR, which normally helps cells grow and divide. Everolimus is a pill taken once a day. Common side effects of this drug include mouth sores, infections, nausea, loss of appetite, diarrhea, skin rash, feeling tired or weak, fluid buildup usually in the legs , and increases in blood sugar and cholesterol levels. A less common but serious side effect is damage to the lungs, which can cause shortness of breath or other problems. Other drugs that treat pancreatic neuroendocrine tumors Other types of drugs are sometimes useful in treating people with pancreatic NETs as well. This drug can block insulin release from the pancreas. It can be used to prevent low blood sugar hypoglycemia in patients with insulinomas. This drug is often used before surgery, to make the operation safer for the patient. These drugs block acid secretion from the stomach. They are often very helpful in preventing ulcers in patients with gastrinomas, although they might need to be taken in higher than usual doses. Examples of these drugs include omeprazole Prilosec , esomeprazole Nexium , and lansoprazole Prevacid. Systemic Radiation Therapy For adults with somatostatin a type of hormone receptor-positive pancreatic neuroendocrine tumors, a radioactive drug, called Lutathera lutetium Lu dotatate , has been approved for treatment. Lutathera, also called a radiopharmaceutical , works by attaching to the somatostatin receptor protein , which is part of the cancer cell, allowing radiation to enter the cell and cause damage. It can be given alone or in combination with octreotide. Serious side effects of Lutathera include low levels of blood cells, development of certain blood or bone marrow cancers, kidney damage, liver damage, abnormal levels of hormones in the body, and infertility. Women who are pregnant or might become pregnant should be advised that Lutathera can cause harm to a developing fetus. Lutathera is given intravenously and does expose those taking it to radiation. Other patients, medical personnel, and household members should limit their radiation exposure in accordance with radiation safety practices.

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Chapter 2 : Brain Tumor - Side Effects

*Drugs Affecting Growth of Tumours (Milestones in Drug Therapy) [Herbert M. Pinedo, Carolien H. Smorenburg] on calendrierdelascience.com *FREE* shipping on qualifying offers. This topical volume provides an overview of clinically relevant data on anticancer agents.*

Many medicines can be used to treat pituitary tumors. Drugs for lactotroph adenomas or prolactin-secreting tumors prolactinomas Drugs called dopamine agonists can stop prolactinomas from making too much prolactin and shrink these tumors. Drugs are often the only treatment needed. Both drugs work well, but cabergoline seems to work better and this drug stays in the body longer than bromocriptine, so it can be taken once or twice a week instead of every day. Most people with prolactinomas can control their prolactin levels with these medicines. The drugs also shrink almost all prolactin-secreting macroadenomas. If successful, the drug treatment may be continued for life. Possible side effects of these drugs include drowsiness, dizziness, nausea, vomiting, diarrhea or constipation, headaches, confusion, and depression. For women whose high prolactin levels had been causing infertility, these drugs may restore fertility. Cabergoline may cause fewer side effects than bromocriptine. Drugs for somatotroph adenomas or growth hormone-secreting tumors These tumors can cause acromegaly in adults and gigantism in children. See Signs and Symptoms of Pituitary Tumors. Somatostatin, which is made in the pituitary and other glands, blocks growth hormone somatotropin production by adenomas. Octreotide is first given as an injection under the skin 3 times per day. A longer acting form is available, which can be given as a monthly injection. Lanreotide and pasireotide are given as an injection about once a month. Doctors measure how well these drugs are working by testing blood growth hormone and IGF-1 levels. Tumors tend to shrink very slowly with these drugs. Many of these side effects improve or even go away with time. They can also cause gallstones, and pasireotide may cause diabetes or worsen it if a person already has it. It has few side effects, but it can lower blood sugar levels and cause mild liver damage in some people. It can be used alone or given along with cabergoline or a somatostatin analog. Drugs like cabergoline or bromocriptine can reduce growth hormone levels in about 1 out of 3 patients. But higher doses are needed for these tumors than for prolactinomas, and some patients have trouble with the side effects they can cause discussed above. An advantage of these drugs is that they can be taken as a pill. Surgery is the preferred treatment. It can take 2 to 5 years to know if radiation worked. Along with side effects such as nausea, vomiting, and diarrhea, this drug can cause high blood sugar levels and gallstones. It limits the effects of cortisol on other tissues in the body. It can have serious side effects and requires close monitoring. Drugs for thyrotroph adenomas or thyrotropin TSH -secreting tumors The first treatment for these rare tumors is surgery. In fact, in some cases, these drugs may be used to normalize thyroid hormone levels and shrink the tumor before surgery is done. Dopamine agonists such as cabergoline or bromocriptine can also be used. These drugs are discussed in more detail above. Surgery and radiation are usually done first. Dopamine agonists and somatostatin analogs have been found to help slow or decrease growth in some of these tumors. These are discussed above in the lactotroph and somatotroph drug sections.

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Chapter 3 : Drugs Used to Treat Pancreatic Neuroendocrine Tumors

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Mental confusion Diagnosis Because the symptoms of acoustic neuroma are often subtle and slow to develop, they can be missed easily in their early stages. Gradual hearing loss, especially if it occurs only in one ear, always should be checked by a physician. If your doctor suspects that you have an acoustic neuroma, he or she will examine you to look for other conditions that can cause similar symptoms. This examination usually will include: Looking in your ears with a lighted magnifying lens Using tuning forks to test your hearing Examining your nose, throat and neck Testing the nerves in your face Checking your balance Your doctor also may recommend a formal hearing test audiogram to determine the type and amount of the hearing loss. Sometimes your doctor may recommend an auditory brain-stem response test, also called evoked potentials or evoked responses. The test measures the speed that the sound is transmitted through the brain. This test will be abnormal and show a delay in the transmission if a tumor is pressing on the nerve that carries signals from the ear to the brain the cochlear nerve. If an examination and hearing testing indicate a possible acoustic neuroma, your doctor may order additional tests to confirm the diagnosis. Most commonly, he or she will recommend a magnetic resonance imaging MRI scan. MRI uses magnetic waves to create pictures of structures inside the body. These pictures can show whether you have an acoustic neuroma, how big the tumor is, and where it is located. An MRI can detect tumors as small as 2mm. Expected Duration Most acoustic neuromas grow slowly, taking years before they become large enough to cause symptoms. A few acoustic neuromas do grow at a faster rate. There is no way to tell the growth rate of any tumor except by periodic MRI scans. Prevention There is no known prevention for acoustic neuromas. Treatment There are three ways to treat acoustic neuromas â€” observation, radiation and surgery. Since the tumor is very slow-growing and benign, having a follow-up MRI scan and an audiogram in 6 and 12 months is a safe alternative to immediate intervention. If no changes are found, yearly checkups afterward are adequate to monitor the tumor. If the tumor does not show signs of growth, intervention is not necessary. The risk of this approach is that further permanent hearing loss can occur during this observation period. If the tumor shows signs of growth or is pressing on the brainstem, radiation or surgery are necessary. The choice between the two depends upon a lot of factors best discussed with your surgeon and radiation oncologist. Factors such as size and location of the tumor, related health issues, age, and hearing loss all need to be considered. If surgery is necessary it is usually performed by a team consisting of a neurosurgeon and an otologist. The neurosurgeon removes the part of the tumor around the brain and the otologist removes the part of the tumor in the ear. Possible complications of surgery include loss of hearing and injury to the facial nerve â€” the nerve that supplies motion to the face. Radiation is an alternative to surgery. It does not remove the tumor, but many times can stop the tumor growth or cause the tumor to shrink. Radiation can be delivered in a number of different ways â€” gamma knife, stereotactic radiosurgery, proton beam radiation and fractionated stereotactic surgery. The choice is made after discussion with the radiation oncologist. Possible complications of radiation include loss of hearing, facial nerve injury and continued growth of the tumor. When To Call A Professional See your physician if you develop new hearing loss or tinnitus, particularly if the hearing loss or tinnitus is only on one side. Prognosis Acoustic neuromas are not cancerous malignant and do not spread to other parts of the body.

Chapter 4 : List of Brain Tumor Medications (12 Compared) - calendrierdelascience.com

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Rejniak 1Integrated Mathematical Oncology, H. Rejniak, Integrated Mathematical Oncology, H. Received Jul 15; Accepted Oct The use, distribution or reproduction in other forums is permitted, provided the original author s or licensor are credited and that the original publication in this journal is cited, in accordance with accepted academic practice. No use, distribution or reproduction is permitted which does not comply with these terms. This article has been cited by other articles in PMC. Abstract Delivery of anti-cancer drugs to tumor tissues, including their interstitial transport and cellular uptake, is a complex process involving various biochemical, mechanical, and biophysical factors. Mathematical modeling provides a means through which to understand this complexity better, as well as to examine interactions between contributing components in a systematic way via computational simulations and quantitative analyses. In this review, we present the current state of mathematical modeling approaches that address phenomena related to drug delivery. We describe how various types of models were used to predict spatio-temporal distributions of drugs within the tumor tissue, to simulate different ways to overcome barriers to drug transport, or to optimize treatment schedules. Finally, we discuss how integration of mathematical modeling with experimental or clinical data can provide better tools to understand the drug delivery process, in particular to examine the specific tissue- or compound-related factors that limit drug penetration through tumors. Such tools will be important in designing new chemotherapy targets and optimal treatment strategies, as well as in developing non-invasive diagnosis to monitor treatment response and detect tumor recurrence. However, success of the systemic treatment depends not only on the efficacy of chemical compounds, but also on whether these compounds can reach all tumor cells in concentrations sufficient to exert therapeutic effect. Most clinically used anti-cancer drugs, however, lead to the emergence of anti-drug resistance, and to overcome this therapeutic limitation, the chemotherapeutic agents are often used in combination with other drugs of different pharmacokinetic properties or in combination with other anti-cancer treatments. The process of drug delivery is complex and embraces different temporal and spatial scales, including the organism level where drug absorption, distribution, metabolism, excretion, and toxicity are studied in various organs and are known together under the acronym ADME-T , tissue and cell scales where the main processes include drug extravasation into the tumor tissue, its penetration via interstitial transport, and cellular uptake , and intracellular level where drug internalization, intracellular pharmacokinetics, accumulation, and efflux are investigated. In this review, we will focus on these mathematical models that act on the tissue scale. We refer the reader to the following research papers and review articles that address the other modeling scales 1 â€” Transport of drug particles at the tissue level encounters several physiological and physical barriers. The architecture of tumor vasculature is leaky and tortuous when compared to the vasculature of normal tissues. As a result, the blood flow is chaotic and the supply of nutrients and drugs irregular. This, in turn, leads to the emergence of regions of transient or permanent hypoxia. The cellular and stromal architecture of tumor tissue is far from being as well organized as that of normal tissues, and it is characterized by increased cell packing density, high variability in tumor cell sizes, and their locations. Together, these result in a non-uniform exposure of tumor cells to metabolites and drugs. Elevated interstitial fluid pressure IFP , which is a consequence of the lack of functional lymphatic vessels, and vascular hyperpermeability, reduce extravasation of both fluid, and drug molecules from the vascular system, hindering advective transport through the tumor tissue. A dense extracellular matrix ECM with irregular alignment of ECM fibers and with increased fiber cross-linking, also hinders the diffusion process. In general, it is difficult to predict the extent of drug penetration into the tumor tissue and to determine the influence of various microenvironmental factors on drug interstitial transport. The former issue can be addressed by developing imaging techniques to visualize either the drug uptake or its lethal effects. The

latter can be tested using systematical computational simulations of properly formulated mathematical models. Several imaging approaches have been used to visualize the effects of drug penetration into the tumor tissue, including naturally fluorescent drugs showing their spatial distribution 12 â€" 14 , specific imaging biomarkers showing the effects of anti-cancer drugs, such as cell DNA damage 15 , 16 , intravital microscopic imaging for real-time in vivo drug distribution 17 , or molecular photoacoustic tomography Numerous imaging techniques and their use in oncology have been reviewed in Weissleder and Pittet 19 , Gillies et al. In silico simulations are well-suited for testing combinations of multiple parameters that can be varied simultaneously in a controlled manner and over a wide range of values. Such a broad screening of drug or tissue conditions is rarely possible in laboratory experiments, but it is relatively easy and cheap in computer simulations. These theoretical screenings can help to determine the properties of therapeutic compounds optimal for their efficient interstitial transport designing in silico drugs or make decisions regarding the most effective drug combinations and scheduling protocols designing in silico trials. Moreover, mathematical modeling allows for bridging laboratory experiments with clinical applications by providing the means to extrapolate the in vivo results from mouse models to humans. Recently, several review papers discussing the power of mathematical and biophysical modeling have been published 22 â€" In this review, we will focus on the most recent research articles that use mathematical and computational models of anti-cancer drugs acting on the cell and tissue scales. In the most general description, changes in the amount of drug present in the tissue depend on three values: However, various phenomena can contribute to each of these three processes. For example, a drug can be supplied from the preexisting vascular system or can be released within the tissue from a moving drug carrier such as a nanoparticle , or it can be activated due to specific environmental conditions for example, low oxygen level or high acidity. Drugs can be carried through the tissue with the interstitial fluid flow advective transport or move randomly due to the Brownian motion of drug molecules diffusive transport. Drug elimination from the tissue can take place due to its natural half-life decay , binding to the ECM degradation or deactivation , or cellular uptake. Mathematically the simplest equation describing the kinetics of drug concentration c x,t at location x and at time t may be written as follows:

Chapter 5 : Drugs Affecting Growth of Tumours : Carolien Smorenburg :

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Chapter 6 : Acoustic Neuroma Guide: Causes, Symptoms and Treatment Options

The different classes of anticancer drugs are described by international authorities on the various topics. Keywords Anti-cancer Drugs New Drug Targets Therapy of Cancer Tumour Growth angiogenesis breast cancer cancer chemotherapy drug research signal transduction tumor tumors vaccination.

Chapter 7 : Current Advances in Mathematical Modeling of Anti-Cancer Drug Penetration into Tumor Tissu

This topical volume provides an overview of clinically relevant data on anticancer agents. The different classes of anticancer drugs are described by international authorities on the various topics.